II.—*Notes on Irish Hydrachnida; with Descriptions of a new Genus and Two new Species.* By J. N. Halbert.

[Plate II.]

The following paper contains records of some species of new or rare Hydrachnida selected from a large amount of material found in various localities in Ireland during the last five years. Of these species two appear not to have been previously described; one of them proves to be the type of a new genus, while of the remaining species eight are here recorded for the first time from the Britannic * area.

It was originally intended to reserve the new mites for description in a general list of the Irish Hydrachnid fauna which is being prepared. Before such a list can be completed, however, it is necessary to carry out some further collecting in certain parts of the country, and it seems more satisfactory to record the new species without further delay.

The most interesting of the new mites is one of which I was fortunate enough to find fully developed specimens when collecting last May in the south-west of Ireland. The species in question seems to be an extremely isolated form, possessing a combination of characters which at once distinguish it from any of the known genera. It would be easy to briefly define a new genus for the reception of this mite by referring to the structure of a very few organs, such as the palps, legs, &c.; in a group like the Hydrachnida, however, where there is such a great variety of structural detail, it seems especially necessary to rely on a combination of various characters in the formation of new genera.

I have to acknowledge the assistance of the Irish Fauna and Flora Committee supported by the Royal Society, and also of the same Committee when acting under the auspices of the Royal Irish Academy: several grants enabled me to collect in distant parts of the country.

The nomenclature used in the following list is that of the 'Tierreich' ("Hydrachnidæ und Halacaridæ," Piersig and Lohmann, Lieferung 13, 1901).

* The use of the word Britannic instead of British for faunistic purposes has been proposed by Professor G. H. Carpenter, as the latter term is now so frequently used to distinguish records referring to Great Britain alone ('Irish Naturalist,' vol. xv. p. 13).

Momonia*, gen. nov.

Diagnosis of Genus.—An Hydrachnid of the family Hygrobatidæ (Kramer, Wolcott, &c.), with a highly chitinized integument modified into chitinous plates. In shape resembling the genus *Midea*, with a convex dorsal area separated from a larger ventral field by a groove in which are a number of paired gland-openings. Epimeral groups close together, occupying most of the underside of the body. Genital area situated between the fourth epimera, flanked on each side by a triangular plate, in which are imbedded three genital suckers of the *Hygrobates* type. Palps with the penultimate segment angularly swollen on the ventral surface and armed with two stout chitinous teeth; fifth segment ending in an exceedingly fine point. First pair of legs modified, the terminal segment deeply excavated on its upper margin, with a broad-shanked bifid claw articulating deeply in the segment, and, in the type species, with a terminal membrane. The three posterior pairs of legs are provided with swimming-hairs.

It will be seen from this short diagnosis that the genus *Momonia* possesses a very anomalous combination of characters which renders the placing of it in a satisfactory position in the Hydrachnid series a matter of some difficulty. On the whole, however, it shows affinities with the genera *Midea*, *Mideopsis*, &c., and it seems to me that it should be placed in an intermediate position between these genera and the *Hygrobates* group.

Momonia falcipalpis †, sp. n.
(Pl. II. figs. 1–4.)

Male.—Body slightly longer than broad, evenly rounded posteriorly, and narrowed towards the front margin, where there are two hair-papillæ. Seen from the side the dorsal outline is moderately convex and the ventral surface flat over the epimeral area; thickness of the body dorso-ventrally about three fifths of the total length. Integument highly chitinized, with a dorsal groove running round close to the body-margin; in this groove are placed at least six pairs of

* Momonia, or Mumonia, the ancient Latin name of the province of Munster. This name has also been used by Mr. R. Lloyd Praeger, M.R.I.A., to indicate the group of plants with a southern range in Ireland (see 'Proceed. Royal Irish Academy,' vol. xxiv. 1902–1904).

† The specific name is suggested by the shape of the terminal palp-segment.

chitinous hair-bearing glands. The greater part of the dorsal area is covered by a large shield with sinuous side-margins bounded by the dorsal groove, the rounded posterior margin reaching to the end of the body. This plate is wrinkled longitudinally, and under a high magnification it is seen to have a finely shagreened appearance as well as polygonal reticulations. In front of this large shield lies a short broad plate, emarginate anteriorly, and rather less than half the breadth of the dorsal shield. The dark-pigmented eyes, separated by an interval of about 176 μ, are situated close to the front margin of the body. On the inner side of each eye-group stands a conspicuous hair-papilla.

The greater part of the ventral side is occupied by the *epimeral plates*; the first and second epimera are of the usual shape—except that the first epimeron is very narrow and tapers inwardly into a rather fine point—separated by an extremely narrow interval from the third epimera. The last are quadrilateral in outline, with the front and hinder margins sloping downwards. The fourth epimeron is extremely large and characteristic; the inner margin is continued for a short distance in a line with that of the third epimeron, it then bends suddenly outwards and downwards in a sinuous line to near the hinder margin of the body, fusing with the chitinous integument of the sides of the body. Near the middle of the fourth epimeral area on each side is a group of long hairs. The epimera are all finely shagreened and reticulated in the same way as the dorsal shield.

The *genital area* lies in the anterior space between the fourth epimera; it is flanked on each side by a long triangular plate, which carries three genital suckers, placed one behind the other, similar in structure to those found in *Hygrobates* and allied genera. A transverse chitinous plate, in which is imbedded the anal opening, occupies the remaining inter-epimeral space.

The *capitulum* is rather small, projecting downwards for part of its length beyond the ventral outline of the body; maxillary shield measuring about 110 μ in length (not including subcutaneous process) and 77 μ in breadth.

The palps are small, the five segments measured along their dorsal margins are 30 μ, 75 μ, 50 μ, 85 μ, 55 μ respectively; segments 1, 2, and 3 may be compared with those of *Mideopsis*; 2 and 3 are furnished with a number of rather stout hairs on the dorsal surface; 4 is the longest palp-segment, it is slightly convex dorsally, with two long fine hairs, ventral surface produced beyond the middle into a well-marked angular prominence, on which are two short stout

teeth placed close to the inner side of the segment; 5 is nearly as broad at base as the distal margin of 4, tapering gradually into a long sharp point; the upper and lower surfaces are each armed with a long hair and a sharp spine; on the outer side close to the base is another spine.

First pair of *legs* (length about 814 μ) modified, without swimming-cilia, slightly longer than the body, the segments gradually increasing in length from 1 to 5. Segment 1 very short, 2 and 3 straight, with a number of long bristles; 4 curved, with the ventral distal margin notched; 5 straight (length 260 μ), broader than preceding segments, and narrowing towards the distal extremity, on which are seven or eight long hairs. Segment 6 (fig. 3) articulates with a conical projection on the penultimate segment, short, with convex sides, very deeply hollowed out on its upper distal margin; a powerful claw-like structure with a broad shank and sharply bent bifid extremity articulates with the inner part of the excavation; a few long hairs and a peculiar cone-shaped membrane project from the extremity of the segment. The last three pairs of legs do not present any remarkable characters; they increase in length from before backwards and are provided with long swimming-cilia; the terminal segments are armed with two recurved tridentate claws resembling those of *Brachypoda*.

During life the *colour* was a pale yellowish green, marked on the dorsal surface with reddish brown; Malpighian area yellow, indicated anteriorly by four lobes arranged across the body.

Measurements.

	μ.
Length of body	768
Breadth of body	691
Length of palp	about 270
Length of leg i.	814
Length of leg ii.	704
Length of leg iii.	792
Length of leg iv.	858

Locality.—Two fully developed examples of this species were found amongst a thick growth of *Callitriche* in Looscaunagh Lough, about ten miles from Killarney, May 1905. From the peculiar modification of the first pair of legs there is no doubt that the specimens are males.

The type specimens are in the Dublin Natural History Museum (register no. 179, 1906).

Arrhenurus octagonus, sp. n. (Pl. II. fig. 5.)

Male.—Colour during life red, with ill-defined darker markings on the back. In dorsal view the body is roughly octagonal in shape, the posterior half being somewhat similar in outline to the anterior. Front margin almost straight, about equal to half the width of the body; all other margins very slightly emarginate. There are no conspicuous dorsal humps, but in the middle of the posterior margin there is a deep excavation, with a prominence on each side on which is a long hair. Dorsal furrow roughly circular in form, enclosing a comparatively small area (length 537 μ) of the middle of the back.

The *appendage* is short, measuring about a sixth of the entire length of the animal and about four fifths as broad; in dorsal view mostly covered by the hinder part of the main body; sides of the appendage hardly constricted at base, gradually narrowing inwards and blending with the hinder margin. Posterior dorsal margin with a wide excavation reaching from side to side; posterior ventral margin slightly sinuate, pierced in the middle by a narrow deep indentation, which widens noticeably at its deepest part and reaches the base of the appendage. The *petiolus* is composed of two finely pointed pieces, which are closely approximated in the living mite, and project in the middle line very slightly beyond the margin of the appendage. There are five or six pairs of very short hairs on the end of the body.

Genital plates large, sinuate anteriorly, and gradually narrowing towards the sides of the body, which they do not overreach. *Epimeral plates* remarkably long and narrow, rather closely resembling those of *A. sinuator*, Müller.

Palps stoutly built, with prominent distal angles to the segments. The inner surface of the second segment seems to be without a hair-pad, but carries a few stout unfeathered bristles. Fourth segment with a long straight spine near the inner distal corner and a widely forked tactile hair on the apical margin.

The *legs* do not present any unusual characters; they are rather stout, of moderate length, and the fourth segment of the last pair is without a spur.

Measurements.

Length of body (including appendage)	1·28 mm.
Breadth of body	about 1·00 mm.
Breadth of appendage at base.....	about 870 μ.
Length of palp	about 430 μ.

Locality.—Found in a pond at Fenagh, Co. Carlow, by Mr. Denis R. Pack-Beresford, M.R.I.A., during the month of August 1903.

Type specimen deposited in the Dublin Natural History Museum (register no. 180, 1906).

Arrhenurus Leuckarti, Piersig.

Both sexes of this mite were collected in the same locality as the preceding species by Mr. Beresford. It is apparently one of our rarest *Arrhenuri*, these being the only Irish specimens that I have seen. Dr. George includes it in his Lincolnshire list, and Mr. Soar reports it from the Norfolk Broads.

Arrhenurus Neumani, Piersig.

This is another addition to the list of Irish *Arrhenuri* published a few years ago*. I found several specimens (♂ and ♀) last year in Looscaunagh Lough in May, and also in Glendalough Lake, Connemara, in the following autumn. Mr. W. Williamson has taken it in Scotland (Trans. Edinb. Field-Nat. and Micros. Soc. Session 1905–1906).

Arrhenurus Stecki, Koenike.

1894. "Zur Hydrachniden-Synonymie," Zool. Anz. xvii. p. 274, fig. 5.

A male of this rare species occurred in a bog-pool almost filled with *Sphagnum* near Ross, Co. Galway, in September 1905. This is the smallest species of the genus as yet found in Ireland, my specimen measuring but 572 μ in length. The colour was pale yellow, with two black blotches showing through behind the epimera.

Localities.—Up to the present time this species has been recorded from Switzerland, where it was found in a similar kind of locality (Moosseedorf-See bei Bern), Germany, and Norway (1899). Dr. George has recorded it from Lincolnshire ('The Naturalist,' 1905, p. 25).

Medeopsis crassipes, Soar.

1904. "Two new British Water-Mites," Journ. Quekett Micros. Club, p. 107, fig. 2.

Specimens of this interesting species were sent to me by Mr. W. F. de Vismes Kane, who collected them, as long ago

* 'Zoologischer Anzeiger,' xxvi. 1903, p. 272.

as September 1899, in Upper Lough Erne, Co. Fermanagh. The specimens were mixed with the commoner *Mideopsis orbicularis* and were so overlooked. I have since taken the species in Lough Gill, Co. Sligo.

**Sperchon brevirostris*, Koenike.

1895. "Neue *Sperchon*-Arten aus der Schweiz," Rev. Suisse Zool. iii. p. 416, pl. xiii. figs. 1–2.

Pool by the Glenshelane River, near Cappoquin, in the county of Waterford, May 1900.

Localities.—A local though widespread species in the west of Europe, having been recorded from Norway, Switzerland, Saxony, Alps (Rhätikon), and the Azores.

**Sperchon longirostris*, Koenike.

1895. "Neue *Sperchon*-Arten aus der Schweiz," Rev. Suisse Zool. iii. p. 420, pl. xiii. figs. 3–6.

Two specimens were found in a stream at Ballysadare, Co. Sligo, in company with *Panisus Michaeli*. A third specimen was taken by my friend Mr. Dudley Westropp near Mullingar in April 1903.

Localities.—Recorded from Germany (Erzgebirge), Switzerland (Rhätikon), and Italy.

**Hygrobates calliger*, Piersig.

1896. "Einige neue Hydrachniden Formen," Zool. Anz. xix. p. 439.

Occurs on the River Nore, near Thomastown, June 1901.

Localities.—Recorded from Norway, Saxony (Erzgebirge), Italy (Ticino), and Germany (Thüringen).

**Laminipes bullata* (Sig. Thor).

1899. "Norske Hydrachnider, III.," Arch. Naturv. Christian. xxi. p. 40, pl. xiii. figs. 129–137.

Pool by the side of Lough Leane, Killarney, June 1905.

Fortunately the single specimen taken is a male and shows the characteristic modification of the fourth pair of legs, as described and figured by Dr. Thor. This appears to be the first record of the species since the original record from Norway, and it seems to have been omitted from the volume of the 'Tierreich' (1901) treating of the Hydrachnida.

* Species marked with an asterisk are recorded for the first time from the Britannic area.

**Laminipes scaurus* (Koen.).

1892. "Anmerkungen zu Piersigs Beitragen zur Hydrachnidenkunde," Zool. Anzeiger, xv. p. 266, fig. 1.

Several males taken in bog-pools on lower slopes of Bragan Mountain, between the counties Monaghan and Tyrone, by Mr. W. F. de Vismes Kane in July 1900.

Localities.—Norway and Germany ('Tierreich').

**Tiphys mutatus* (Piersig).

1893. *Acercus brevipes*, Zool. Anz. xvi. p. 394.
1901. *Tiphys mutatus*, Piersig (nom. nov.), Tierreich, p. 241.

Two specimens (♀) taken at Glenavy, on the shore of Lough Neagh, June 1902. The male appears to be unknown.

**Piona stjordaliensis* (Sig. Thor).

1900. "Hydrachnologische Notizen, V.," Nyt Mag. Naturvid. xxxviii. pp. 375–378, pl. xvii. figs. 21–24.

This species is allied to *P. nodata*, Müller, and *P. controversiosa*, Piersig, but differs sufficiently from both in the structure of the genital area, palps, and especially in the armature of the terminal segment of the third pair of legs in the male. The species was first described in 1896 by Dr. Thor, and was supposed by Dr. Piersig to be synonymous with *P. controversiosa*, but the more detailed description published in the above reference clearly shows the distinctions between the species.

The only Irish specimens examined were taken by Mr. W. F. de Vismes Kane in Drumreaske Lake, Co. Monaghan.

**Panisus Michaeli*, Koen. (Pl. II. fig. 6.)

1896. Zool. Anzeiger, xix. p. 356.

When in the west of Ireland in the spring of 1901 I found an Hydrachnid of the genus *Panisus* amongst water-plants in a small stream which flows into the sea at the head of Ballysadare Bay. On examination it agreed closely with the description of *P. Michaeli*, Koenike, except that the chitinous marginal plates of the dorsal surface numbered four on each side in my specimen, instead of five, as recorded for *P. Michaeli*. On sending drawings of the mite to Dr. Koenike, he was good enough to assure me that my species is identical with *P. Michaeli*. There are in reality only four marginal plates on each side in that species; the statement that there

were five was due to the outlines of the plates not being clearly visible at the time the preliminary description was made. There are sixteen chitinous plates on the dorsal surface, arranged as follows:—A middle series, consisting of a large plate between the eyes; behind this are three small circular plates, arranged on each side of the middle line; and, finally, a large terminal plate, sinuate in front, with the postero-lateral corners produced into pointed processes. The eight marginal plates are arranged in a line on each side of the body; the most anterior of these sends forward a long narrow prolongation on the outside of the eye. All of the dorsal plates are coarsely areolated towards their margins and more finely in the centres; they are also very irregular in outline, differing considerably on each side of the body.

The species seems to be very local, and as I have seen no reference to figures, a drawing (fig. 6) of the dorsal surface is given; the areolation of only the terminal plate is indicated.

Localities.—Panisus Michaeli was first recorded from Switzerland, where it was discovered by Dr. A. D. Michael at Davos; and Dr. Sig. Thor has recently recorded it from Norway. I have also seen a specimen collected by Mr. William Evans near Bolerno, Scotland, in the autumn of last year.

Thyas longirostris, Piersig.

This very distinct species is of local occurrence in Ireland. I once found amongst *Callitriche* in a small pool near Kenmare many specimens, some of which were very large, measuring nearly 3 mm. in length. In his paper on the British species of *Thyas* ('Science Gossip,' viii. p. 46) Dr. George refers to the occurrence of this species in Ireland, and Mr. C. D. Soar has since found it in the Norfolk Broads.

EXPLANATION OF PLATE II.

Fig. 1. *Momonia falcipalpis*, sp. n. Dorsal view; legs and palp not drawn. × 60.

Fig. 2. *Momonia falcipalpis*, sp. n. Ventral view, showing structure of epimera &c. × 60.

Fig. 3. *Momonia falcipalpis*, sp. n. Terminal segment of first leg, seen from below. × 224.

Fig. 4. *Momonia falcipalpis*, sp. n. Fourth and fifth palp-segments. × 224.

Fig. 5. *Arrhenurus octagonus*, sp. n. Dorsal view of male. The two pieces of the petiole are closely approximated in the living mite. × 35.

Fig. 6. *Panisus Michaeli*, Koenike. Dorsal surface, showing arrangement of chitinous plates. × 60.